

IN THE CLAIMS

1. (Currently Amended) A method for maintaining a map of node relationships for a network of related nodes, the method comprising the steps of:
  - detecting a change of a relationship between a first network node and a second network node having a child relationship to the parent-first network node, the first network node being a parent to the second network node;
  - generating a change relationship signal indicating the change of the relationship between the first network node and the second network node; and
  - transmitting the change relationship signal, having a change sequence number, to a parent node of the first network node so that the parent node receives an update of a state of the relationship between the first network node and the second network node.
2. (Currently Amended) A method for maintaining a map of node relationships for a network of related nodes, the method comprising the steps of:
  - detecting a change of a relationship between a first network node and a second network node having a child relationship to the parent-first network node, the first network node being a parent to the second network node;
  - generating a change relationship signal indicating the change of the relationship between the first network node and the second network node, generating the change relationship signal further comprising generating the change relationship signal having a sequence number indicating a number of relationship changes of the second network node, the sequence number representing a count of parents of the second network node; and

transmitting the change relationship signal to a parent node of the first network node so that the parent node receives an update of a state of the relationship between the first network node and the second network node.

3. (Cancelled)
4. (Currently Amended) The method of claim 1, further comprising the step of:

selectively updating a map of node relationships based on the change relationship signal having the sequence number operable for comparison with previously received sequence numbers such that the map of node relationships indicates the state of the relationship between the first network node and the second network node.
5. (Original) The method of claim 1, further comprising the steps of:

receiving a propagated change relationship signal indicating a change in a relationship between two network nodes other than the first network node; and

transmitting the propagated change relationship signal to the parent node, so that the parent node receives an update of a state of the relationship between the two network nodes.
6. (Original) The method of claim 5, further comprising the step of:

updating the map of node relationships based on the propagated change relationship signal such that the map of node relationships indicates the state of the relationship between the two network nodes other than the first network node.

7. (Original) The method of claim 1, further comprising the steps of:
  - receiving a plurality of propagated change relationship signals indicating a change of relationship between two network nodes, each propagated change relationship signal having a sequence number;
  - comparing the sequence numbers for the propagated change relationship signals;
  - selecting one of the propagated change relationship signals with which to update the map of node relationships based on the step of comparing the sequence numbers; and
  - transmitting the selected one of the propagated change relationships signals to the parent node, so that the parent node receives an update of a state of relationship between the two network nodes.
8. (Original) The method of claim 1, wherein the change relationship signal is a termination signal indicating the termination of the relationship between the first network node and the second network node.
9. (Original) The method of claim 1, wherein the change relationship signal is a creation signal indicating the creation of the relationship between the first network node and the second network node.
10. (Original) The method of claim 1, wherein the step of detecting the change of the relationship comprises initiating a check-in communication from the second network node to the first network node.
11. (Currently Amended) A computer system comprising:
  - a processor;
  - a memory; and
  - an interconnection mechanism coupling the processor and the memory;

wherein the memory is encoded with logic instructions for a map maintainer application that, when performed on the processor, cause the processor to form a map maintainer that maintains a map of node relationships for the network by performing the operations of:

detecting by the processor a change of a relationship between a first network node and a second network node having a child relationship to the parent first network node;

generating a change relationship signal, the change relationship signal having a change sequence number, in the memory indicating the change of the relationship between the first network node and the second network node; and

transmitting the change relationship signal to a parent node of the first network node so that the parent node receives an update of a state of the relationship between the first network node and the second network node.

12. (Currently Amended) A computer system comprising:

a processor;

a memory; and

an interconnection mechanism coupling the processor and the memory;

wherein the memory is encoded with logic instructions for a map maintainer application that, when performed on the processor, cause the processor to form a map maintainer that maintains a map of node relationships for the network by performing the operations of:

detecting by the processor a change of a relationship between a first network node and a second network node having a child relationship to the parent first network node;

generating a change relationship signal in the memory indicating the change of the relationship between the first network

node and the second network node, the change relationship signal having a sequence number indicating a number of relationship changes of the second network node, the sequence number representing a count of parents of the second network node; and transmitting the change relationship signal to a parent node of the first network node so that the parent node receives an update of a state of the relationship between the first network node and the second network node.

13. Cancelled
14. (Currently Amended) The computer system of claim 11, wherein the logic instructions for the map maintainer application comprise further logic instructions that, when performed on the processor, cause the map maintainer to perform the operation of selectively updating the map of node relationships based on the change relationship signal, the change relationship signal having the sequence number operable for comparison with previously received sequence numbers such that the map of node relationships indicates the state of the relationship between the first network node and the second network node.
15. (Previously Presented) The computer system of claim 11, wherein the logic instructions for the map maintainer application comprise further logic instructions that, when performed on the processor, cause the map maintainer to perform the operations of:
  - receiving a propagated change relationship signal indicating a change in a relationship between two network nodes other than the first network node; and
  - transmitting the propagated change relationship signal to the

parent node, so that the parent node receives an update of a state of the relationship between the two network nodes.

16. (Previously Presented) The computer system of claim 15, wherein the logic instructions for the map maintainer application comprise further logic instructions that, when performed on the processor, cause the map maintainer to perform the operation of updating the map of node relationships based on the propagated change relationship signal such that the map of node relationships indicates the state of the relationship between the two network nodes other than the first network node.
17. (Previously Presented) The computer system of claim 11, wherein the logic instructions for the map maintainer application comprise further logic instructions that, when performed on the processor, cause the map maintainer to perform the operations of:
  - receiving a plurality of propagated change relationship signals indicating a change of relationship between two network nodes, each propagated change relationship signal having a sequence number;
  - comparing the sequence numbers for the propagated change relationship signals;
  - selecting one of the propagated change relationship signals with which to update the map of node relationships based on the step of comparing the sequence numbers; and
  - transmitting the selected one of the propagated change relationships signals to the parent node, so that the parent node receives an update of a state of relationship between the two network nodes.

18. (Original) The computer system of claim 11, wherein the change relationship signal is a termination signal indicating the termination of the relationship between the first network node and the second network node.
19. (Original) The computer system of claim 11, wherein the change relationship signal is a creation signal indicating the creation of the relationship between the first network node and the second network node.
20. (Original) The computer system of claim 11, wherein the second network node initiates a check-in communication from the second network node to the first network node.
21. (Currently Amended) A computer program product that includes a ~~computer readable medium having computer program instructions stored in a tangible storage medium thereon~~ for maintaining a map of node relationships for a network, such that the instructions, when carried out by a computer, cause the computer to perform the steps of:
  - detecting a change of a relationship between a first network node and a second network node having a child relationship to the parent first network node;
  - generating a change relationship signal having a change sequence number indicating the change of the relationship between the first network node and the second network node; and
  - transmitting the change relationship signal to a parent node of the first network node so that the parent node receives an update of a state of the relationship between the first network node and the second network node.

22. (Currently Amended) A computer system for maintaining a map of node relationships for a network of related nodes, the computer system comprising:

means for detecting a change of a relationship between a first network node and a second network node having a child relationship to the parent first network node;

means for generating a change relationship signal having a change sequence number indicating the change of the relationship between the first network node and the second network node; and

means for transmitting the change relationship signal to a parent node of the first network node so that the parent node receives an update of a state of the relationship between the first network node and the second network node.

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